

IN THE CLAIMS:

Please amend the claims as follows.

1. (Currently Amended) A method for manufacturing a gallium nitride ~~compound~~ based semiconductor, comprising the steps of:
 - (a) forming a first gallium nitride ~~compound~~ based semiconductor on a substrate, the first gallium nitride ~~compound~~ based semiconductor having a first surface;
 - (b) forming on less than a total area of the first surface a composition material of the first gallium nitride ~~compound~~ based semiconductor; and
 - (c) forming a second gallium nitride ~~compound~~ based semiconductor on the first gallium nitride ~~compound~~ based semiconductor on which the composition material is formed; wherein a spatial fluctuation is created in the band gap by variation in the compositional ratio in the second gallium nitride ~~compound~~ based semiconductor created by the composition material, and the second gallium nitride ~~compound~~ based semiconductor is a light emitting layer.
2. (Currently Amended) A method according to claim 1, wherein the first gallium nitride ~~compound~~ based semiconductor and the second gallium nitride ~~compound~~ based semiconductor are AlGaN; and the composition material is one selected from Ga or Al.
3. (Currently Amended) A method for manufacturing a gallium nitride ~~compound~~

based semiconductor, comprising the steps of:

(a) forming a base layer on a substrate, the base layer constructed by forming a layer on less than a total area of a surface of the base layer for varying the diffusion lengths of composition materials of a gallium nitride ~~compound~~ based semiconductor; and

(b) forming the gallium nitride ~~compound~~ based semiconductor on the base layer; wherein

a spatial fluctuation is created in the band gap by creating a variation in the compositional ratio in the gallium nitride ~~compound~~ based semiconductor by varying the diffusion lengths of the composition materials, and the gallium nitride ~~compound~~ based semiconductor is a light emitting layer.

4. (Currently Amended) A method according to claim 3, wherein the gallium nitride ~~compound~~ based semiconductor is AlGaN and the layer for varying the diffusion lengths of the composition materials is formed from SiN.

5. (Currently Amended) A method for manufacturing a gallium nitride ~~compound~~ based semiconductor comprising the steps of:

(a) forming, on a substrate, a base layer having a lattice mismatch layer formed on less than a total area of a surface of the base layer; and

(b) forming the gallium nitride ~~compound~~ based semiconductor on the base layer; wherein

a spatial fluctuation is created in the band gap of the gallium nitride ~~compound~~

based semiconductor by the lattice mismatch, and the gallium nitride ~~compound~~ based semiconductor is a light emitting layer.

6. (Currently Amended) A method according to claim 5, wherein the lattice mismatch is formed by discretely forming at least one of AlN, InN, AlInGa₂N, Si, AlGa₂N, and MgN.
7. (Currently Amended) A method according to claim 5, wherein the gallium nitride ~~compound~~ based semiconductor has a superlattice structure of AlGa₂N and GaN.
8. (Currently Amended) A light emitting element comprising a gallium nitride ~~compound~~ based semiconductor, the light emitting element comprising:
 - a substrate;
 - a first gallium nitride ~~compound~~ based semiconductor layer formed on the substrate, the first gallium nitride ~~compound~~ based semiconductor layer having a first surface;
 - a composition material of the first gallium nitride ~~compound~~ based semiconductor formed on less than a total area of the first surface; and
 - a second gallium nitride ~~compound~~ based semiconductor layer having a varied compositional ratio and formed on the first gallium nitride ~~compound~~ based semiconductor layer onto which the composition material is formed, and the second gallium nitride ~~compound~~ based semiconductor is a light emitting layer.

9. (Currently Amended) A light emitting element according to claim 8, wherein the first gallium nitride ~~compound~~ based semiconductor and the second gallium nitride ~~compound~~ based semiconductor are AlGa_N; and the composition is one selected from Ga or Al.
10. (Currently Amended) A light emitting element comprising a gallium nitride ~~compound~~ based semiconductor, the light emitting element comprising:
a substrate;
a base layer formed on the substrate and constructed by forming a layer on less than a total area of a surface of the base layer for varying the diffusion lengths of the composition materials of the gallium nitride ~~compound~~ based semiconductor; and
gallium nitride ~~compound~~ based semiconductor layer having a varied compositional ratio and formed on the base layer, and the gallium nitride ~~compound~~ based semiconductor is a light emitting layer.
11. (Currently Amended) A light emitting element according to claim 10, wherein the layer for changing the diffusion length of the composition materials is SiN and the gallium nitride ~~compound~~ based semiconductor is AlGa_N.
12. (Currently Amended) A light emitting element using a gallium nitride ~~compound~~ based semiconductor, the light emitting element comprising:

a substrate;

a base layer formed on the substrate and having a lattice mismatch formed on less than a total area of a surface of the base layer; and

a gallium nitride ~~compound~~ based semiconductor layer formed on the base layer and having a spatial fluctuation in the band gap, and the gallium nitride ~~compound~~ based semiconductor is a light emitting layer.

13. (Currently Amended) A light emitting element according to claim 12, wherein the gallium nitride ~~compound~~ based semiconductor layer has a superlattice structure.